

Proposed Prohibition
On-Site Wastewater Disposal Systems
(Septics)
Malibu Civic Center Area

CA Regional Water Quality Control Board – Los Angeles Region
Workshop – September 1, 2009 (Pepperdine)

Agenda

- Introductory Remarks
- Proposed Prohibition
- Reasons for the Prohibition:
 - Polluted lagoon
 - Polluted beaches
 - Polluted groundwater
 - Compliance records of permitted dischargers
 - Reliance on hauling raw sewage
- Alternatives (Program)
- Economics of possible compliance projects
- Public – comment and questions



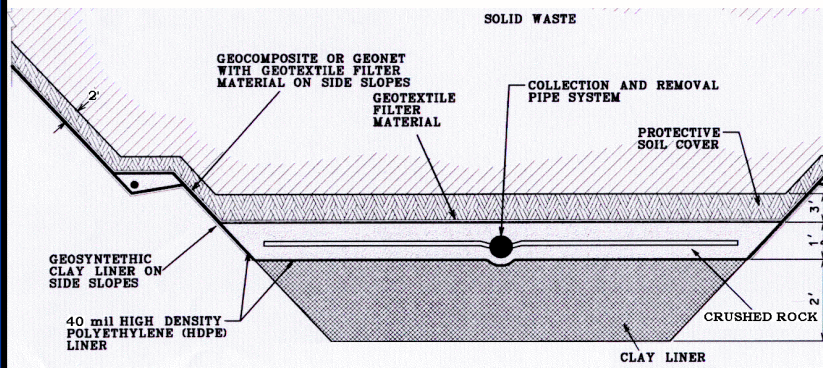
State and Regional Water Quality Control Boards

Regulating Discharges of Waste (Solid and Liquid)



June 24, 2009

Photo: E



May 1, 2009

Photo: Enrique Casas

Mission – to Protect Water Quality for Present and Future Generations

- Prevent pollution: by regulating wastewater discharges – waste discharge requirements (WDRs)
 - Surface waters (aka NPDES* permits)
 - Ground waters (including landfills)
- Oversee clean-ups
- Rule-making:
 - Set water quality objectives (*Basin Plan*)
 - Specify waste loads for impaired waters (TMDLs**)
 - Issue prohibitions

*National Pollutant Discharge Elimination System **Total Maximum Daily Load



Proposed Prohibition

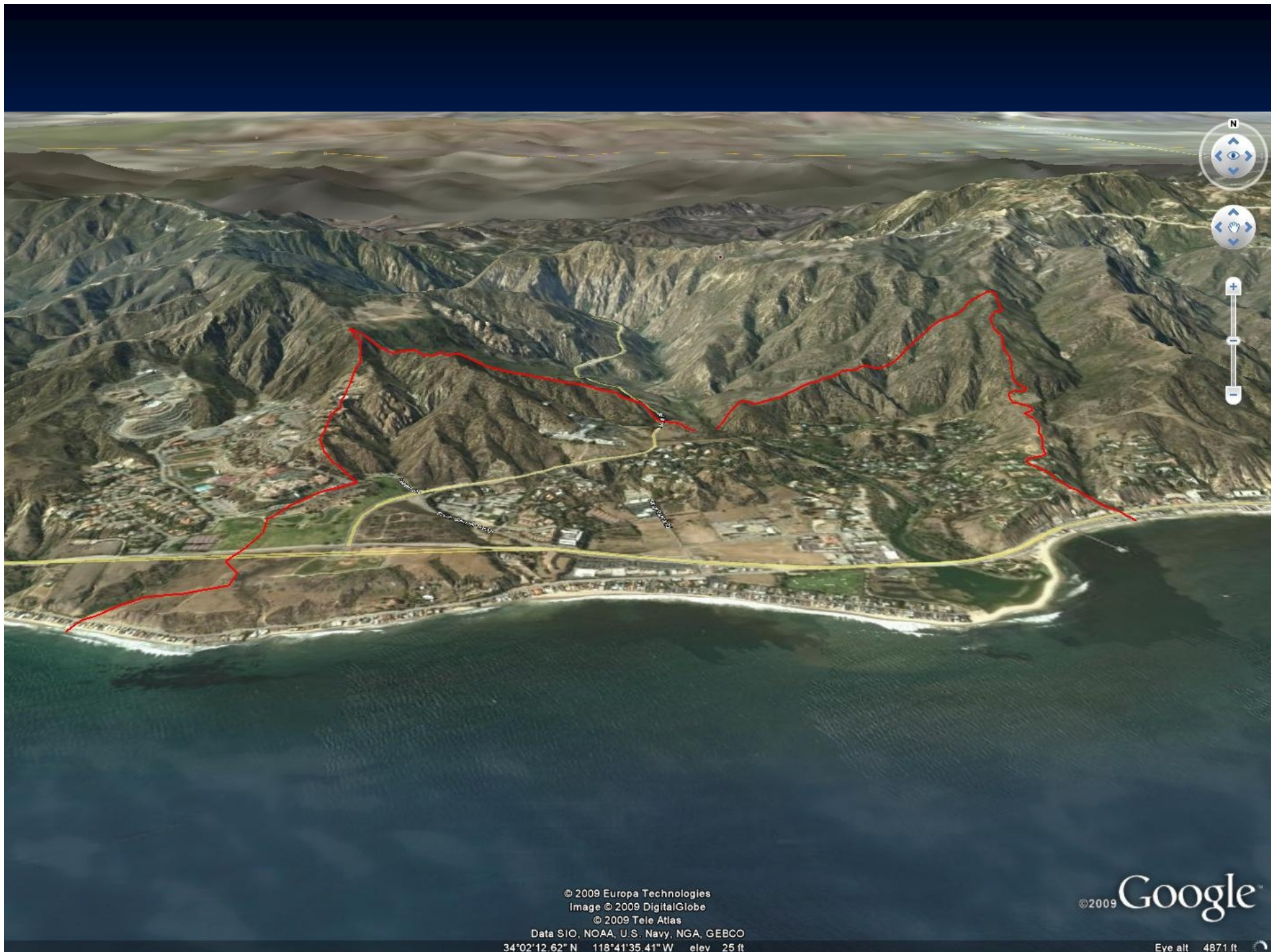
- Goal – to remedy water pollution:
 - Beaches
 - Malibu Lagoon
 - Groundwater
- Regulatory action – to prohibit discharges from on-site wastewater disposal systems (OWDSs)
 - Conventional septics
 - Others (advanced plants, package plants)



MLY Malibu Lumber Yard

Proposed Prohibition

- When?
 - New discharges: immediately (Nov 5, 2009)
 - Existing discharges: five years to cease discharge
- Where? Applies to all discharges located in the Malibu Civic Center area:
 - Commercial and industrial facilities
 - Public facilities
 - Residential properties



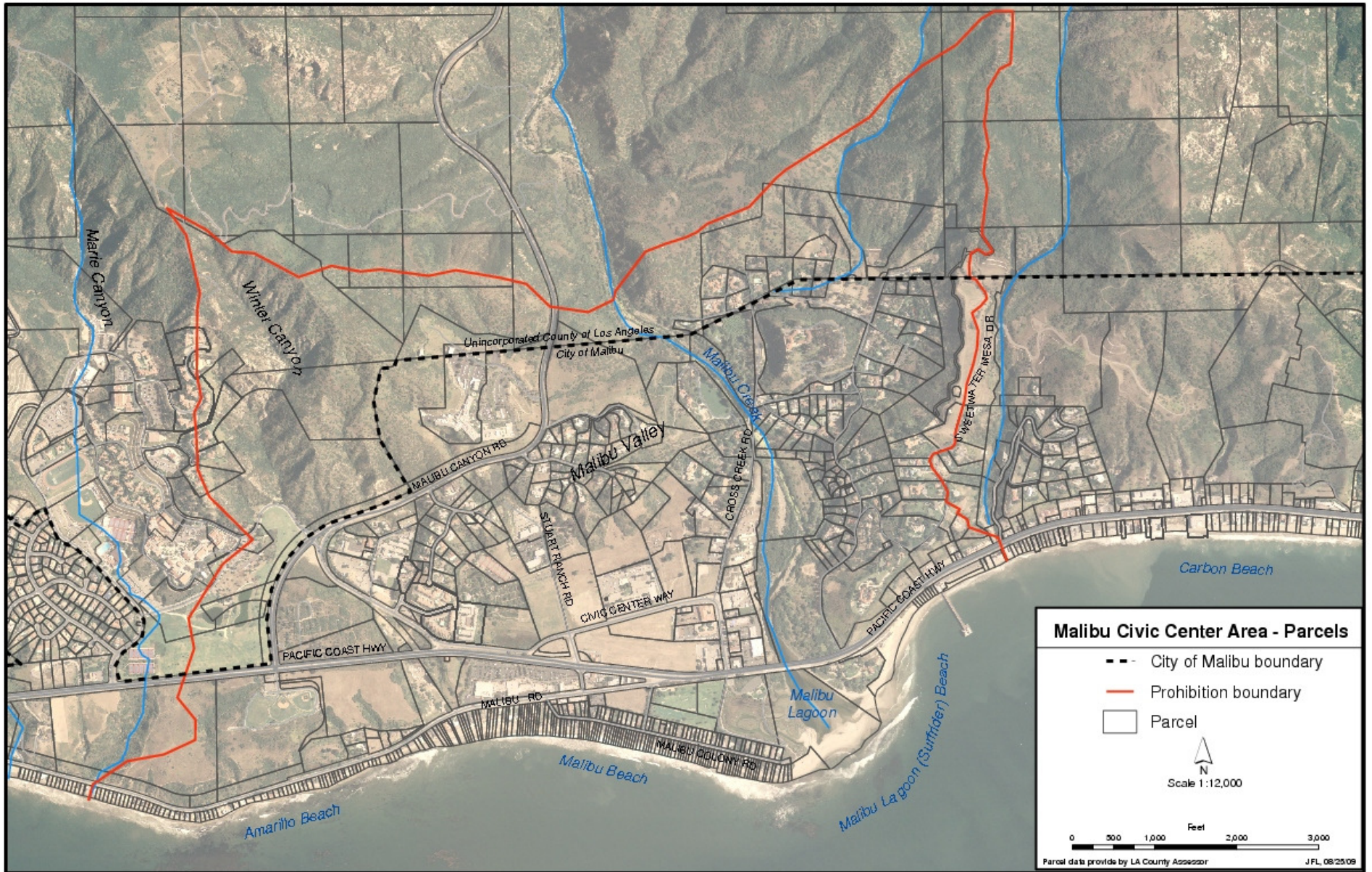
© 2009 Europa Technologies
Image © 2009 DigitalGlobe
© 2009 Tele Atlas

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

34°02'12.62" N 118°41'35.41" W elev 25 ft

©2009 Google

Eye alt 487.1 ft



Reasons for the Prohibition

- Polluted lagoon (Tech Memo #4)
- Polluted beaches (Tech Memo #3)
- Polluted groundwater (Tech Memo #2)
- Compliance records of permitted dischargers (Tech Memo #1)
- Reliance on hauling raw sewage (Tech Memo #5)

Malibu Lagoon

- Nutrient (nitrogen and phosphorus) loads accelerate eutrophication. (Over stimulates algae, which depletes oxygen dissolved in water.)
- Eutrophication: an increase in nutrients in an ecosystem, to an extent that increases in the primary productivity of the ecosystem. Depending on the degree of eutrophication, subsequent negative environmental effects such as anoxia and severe reductions in water quality, fish, and other animal populations may occur.



Malibu Lagoon (Tech Memo #4)

- Quantify nitrogen loads from OWDs
- Compiled an inventory of discharges
 - 268,000 gallons per day
- Calculated nitrogen loading rates
- Evaluated groundwater flow regime
 - Amount flowing to lagoon (versus coast)
 - Attenuation (decay) between the point of release and the water table.

Malibu Lagoon (Tech Memo #4)

- **6 lb/day – restoration target*** (load allocated for OWDSs) *Total Maximum Daily Load (TMDL), US EPA, 2003
- **29 – 36 lb/day nitrogen – current load** (Tech Memo #4 findings)
- **17 to 32 lb/day – estimates by third parties**
- **Conclusion – Nitrogen released from OWDSs impairs aquatic life**

Technical Memo #3
Pathogens in Wastewaters
that are in Hydraulic Connection with Beaches are a
Significant Source of Impairment for Water Contact Recreation
presenting evidence in support of an Amendment to the Water Quality Control Plan
for the Coastal Watersheds of Los Angeles and Ventura Counties
to incorporate a Prohibition on On-site Wastewater Disposal Systems in the Malibu Civic Center Area

CA Regional Water Quality Control Board – LA

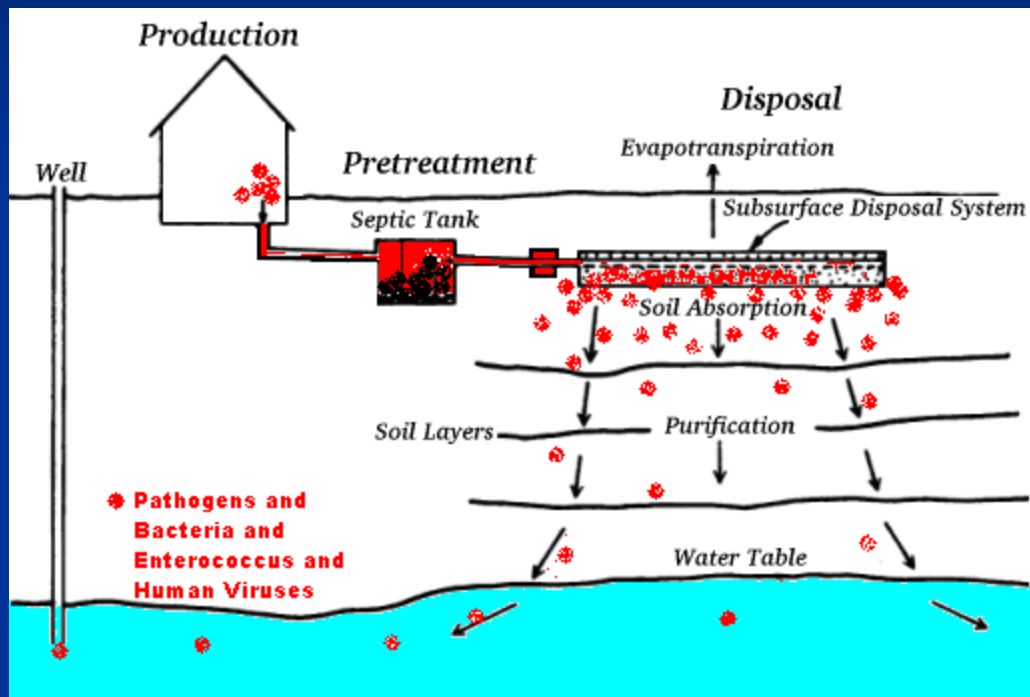
Elizabeth Erickson, P.G., Engineering Geologist

September 1, 2009

eerickson@waterboards.ca.gov 213 620 2264

Human Pathogens

- Illness is transmitted by human waste, unless it is cleaned in the soil.
- If the waste is not cleaned, *Enterococcus* (a bacteria found in the human intestine) is present, showing human waste has fouled wells and beaches.
- More *Enterococcus* on a beach means more swimmers will swallow human pathogens and can become ill.



Questions answered to assess risk of Illness due to septic bacteria

- #1 Do the waters in the Civic Center present a health risk?
- #2 What is the best approach to quantify the level of pathogens released from OWDSs that migrate to the beaches?
- #3 Is there a pathway from OWDSs in the Civic Center area to the beaches?
- #4 Are OWDSs responsible for persistent failures to meet the water contact standard on Civic Center area beaches, as opposed to birds and other non-human sources?



#1 Do the waters in the Civic Center cause a human health risk?

- Yes
- Civic Center beaches, groundwater and surface water have more Enterococcus than water quality standards, showing the public is not protected.
- The public is protected on other beaches

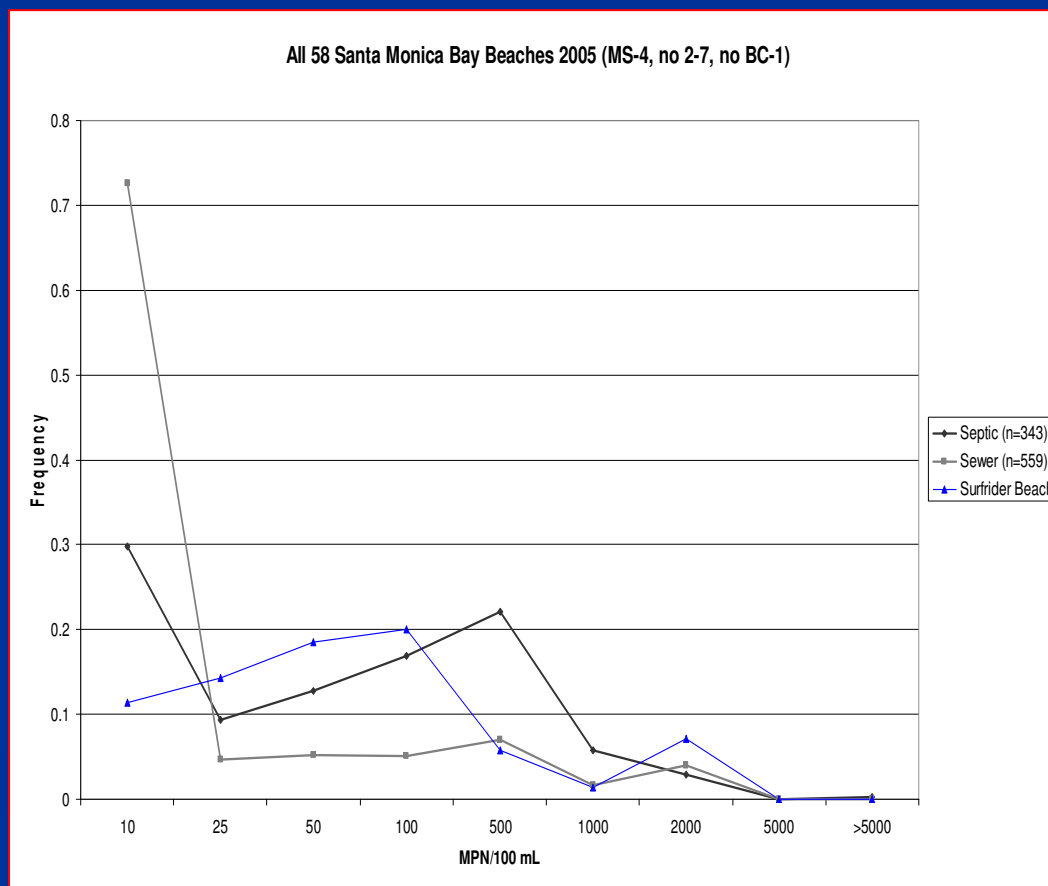
Failure to meet in Summer 2007	Ent	Mean Ent	Days
Surfrider	9	8	62
SM Canyon	8	0	10
Venice	0	0	0
Dockweiler	0	0	1
Colony	0	13	14
Will Rogers	3	3	3
SM Strand	0	0	0
Hermosa	1	1	1
Malibu Pier	3	16	19
SM Pier	15	13	236
Redondo Pier	2	2	2
Hermosa Pier	1	1	1

#2 What is the best approach to quantify pathogens released from OWDSs that migrate to the beach?

- Compare many septic and sewer beaches
- Issue not resolved by 22 Civic Center studies

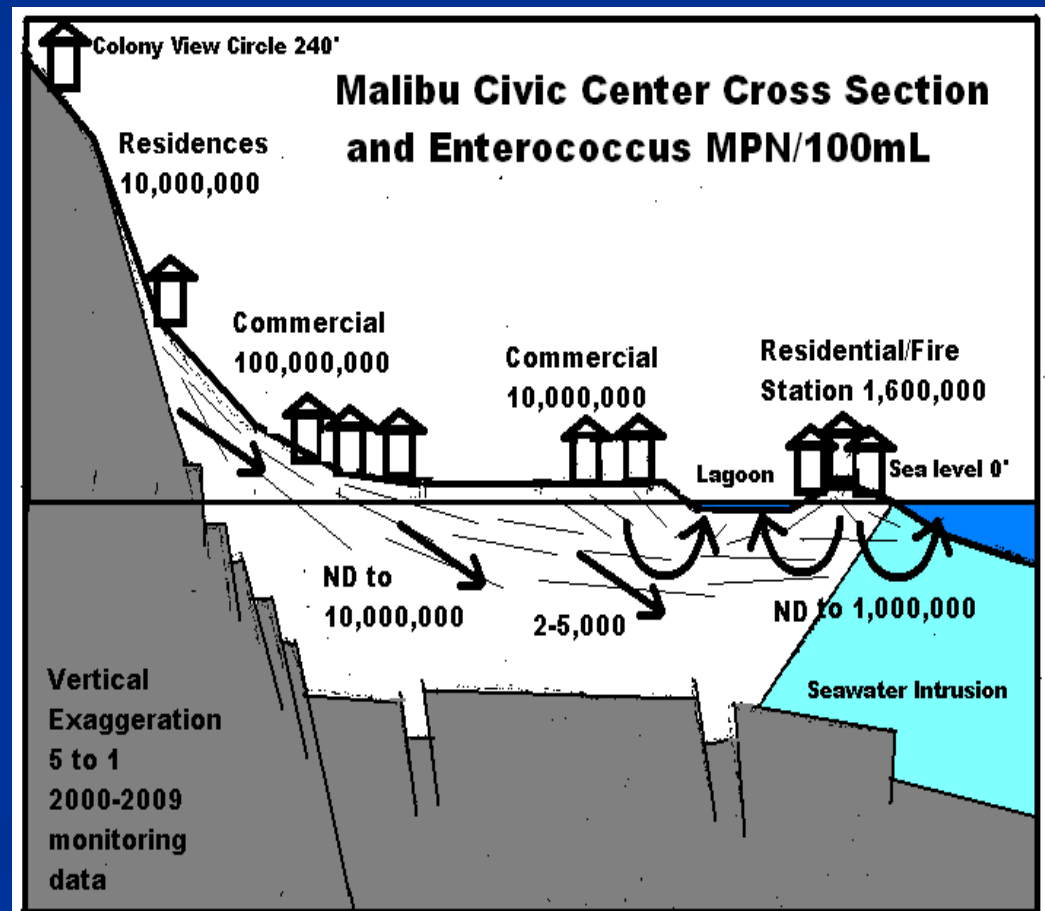
- Examine 8000 summer samples on 58 Santa Monica Bay beaches

- Beaches with septic systems have more *Enterococcus* bacteria than sewer beaches
- Beaches with similar characteristics (birds, size, number of visitors) have, on average, less bacteria than found on Civic Center beaches
- Summer beaches have consistent bacteria characteristics



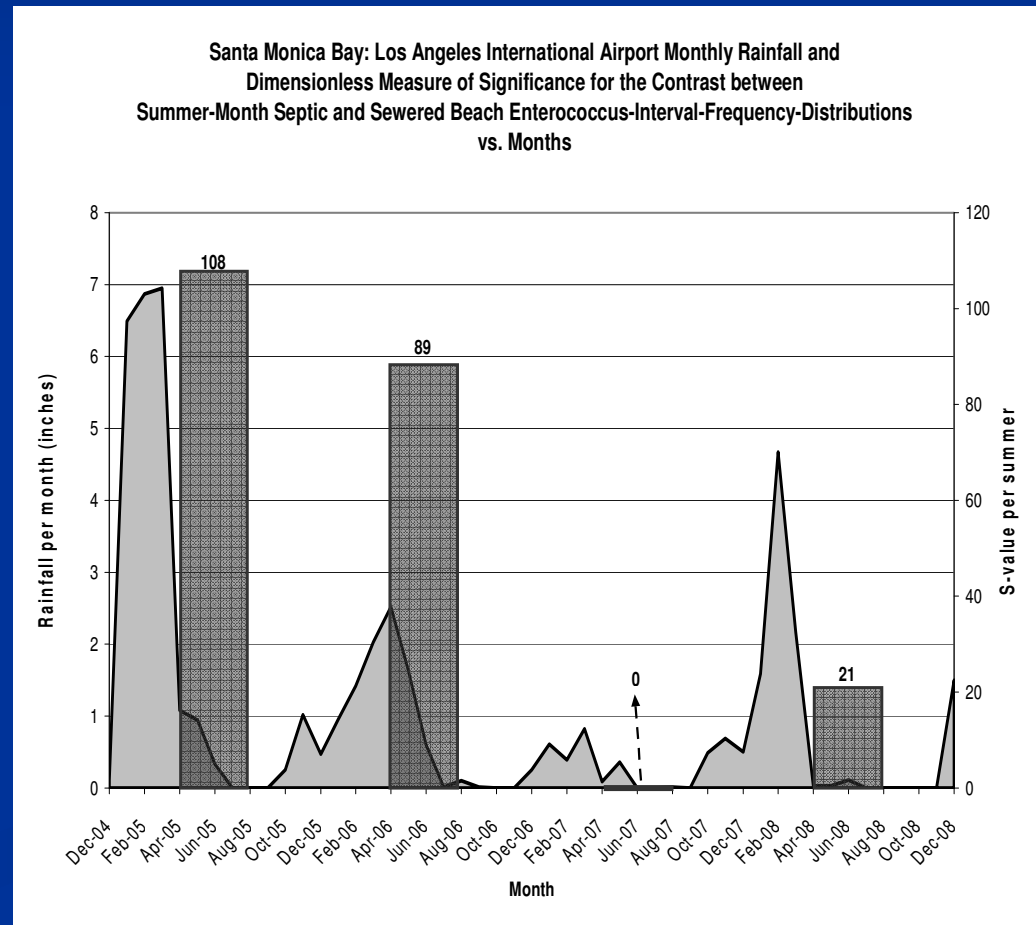
#3 Is there a pathway from OWDs in the Civic Center area to the beaches?

- Yes
- Enterococcus was found along the path through groundwater from the leachfields to discharge into the ocean.
- Recent studies on other beaches also document groundwater discharge and enterococcus/virus transport.



#4 Are OWDSs responsible for persistent failures to meet water contact standards in the Civic Center area beaches, as opposed to birds and other non-human sources?

- Yes
- Stormwater/urban sources (largest in winter) are present but small in summer.
- Natural sources present and small.
- A source of groundwater with enterococcus is present on septic beaches, especially after wet winters, and missing on sewerred beaches.



Conclusions

- Discharge to soil from septic systems can safely remove bacteria, but not all bacteria are removed in the Civic Center area.
- Natural and stormwater bacteria appear on the beach in the winter. Bacteria from septic tanks are found in the summer.
- The septic bacteria move to the beach via groundwater, and increase the human health risk.

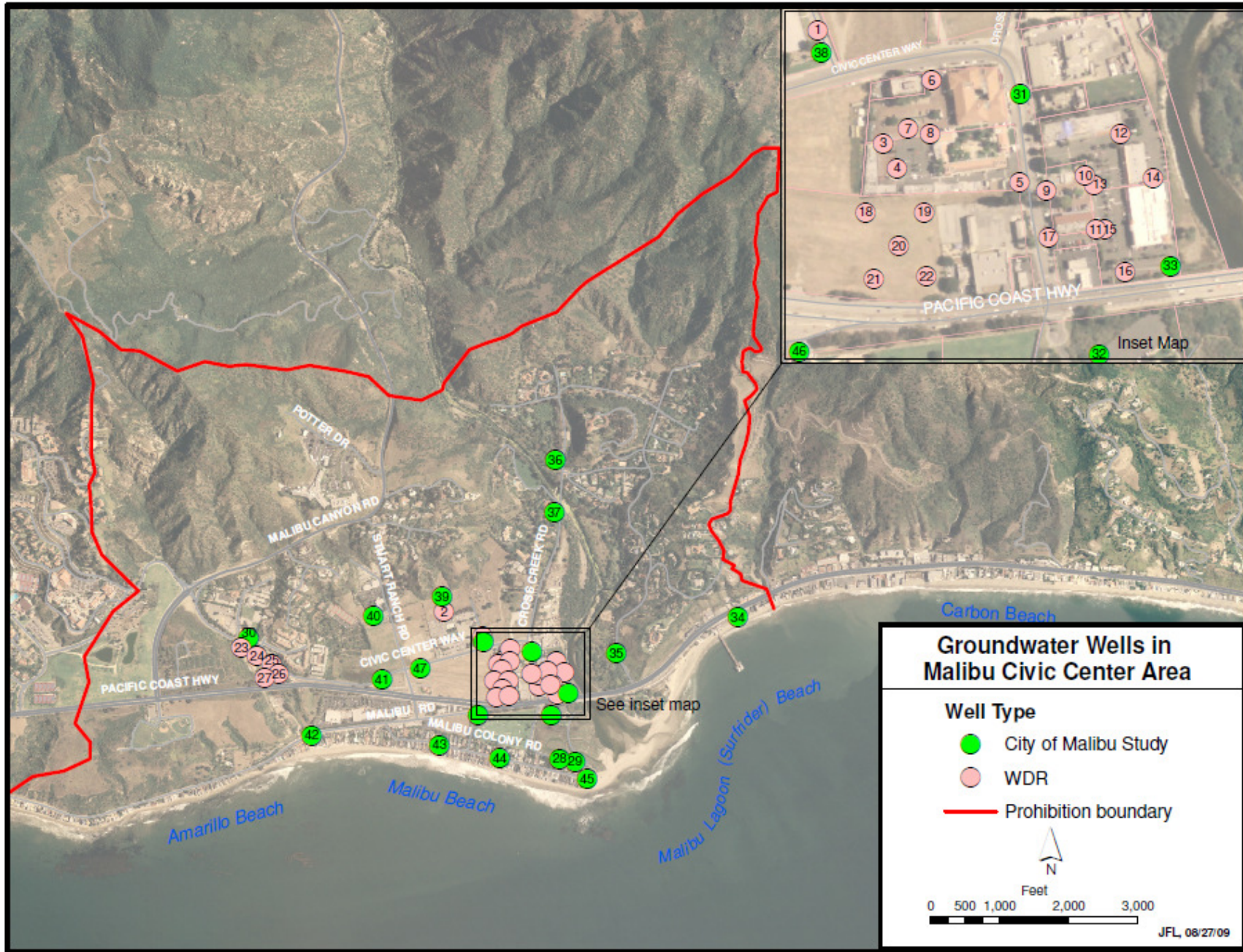
Tech Memo #2

Pathogens and Nitrogen in Wastewaters Impair Underlying Groundwater as a Potential Source of Drinking Water

Rebecca Chou, Ph.D., P.E.
Chief of Groundwater Permitting Unit
Regional Water Quality Control Board
Los Angeles Region

Groundwater Beneficial Uses

- ❑ Located in the Malibu Valley Groundwater Basin
- ❑ Potential Beneficial Uses include:
 - ❖ municipal and domestic supply (drinking water use)
 - ❖ industrial service supply
- ❑ Existing Beneficial Uses include:
 - ❖ agricultural supply



METHODS AND PROCEDURES

- ❑ Collect and review data from 47 groundwater monitoring wells in the study area
- ❑ Analyze data for fecal coliform, total coliform, total nitrogen (nitrate + nitrite), total nitrogen (ammonia + nitrate + nitrite)
- ❑ Groundwater quality failed to meet drinking water standard – Maximum Contaminant Levels (MCL)

Summary of 671 Groundwater Samples from 47 Wells

	Fecal Coliform	Total Coliform	Nitrate + Nitrite	Ammonia+ Nitrate+Nitrite
MCL	0	0	10	10
Concentration Range	0 – 140,000 MPN/100m l	0 – 16,000,000 MPN/100 ml	0 – 120 mg/l	0 – 120 mg/l
Total Samples Analyzed	671	671	671	671
# Samples failed to meet MCL	360	480	100	163
% Samples failed to meet MCL	54%	72%	15%	24%

Summary of Groundwater Quality by Wells

	Fecal Coliform	Total Coliform	Nitrate + Nitrite	Ammonia+ Nitrate+Nitrite
Total number of wells	47	47	47	47
Number of wells failed to meet MCL	44	47	14	24
% wells failed to meet MCL	94%	100%	30%	51%

Tech Memo #2

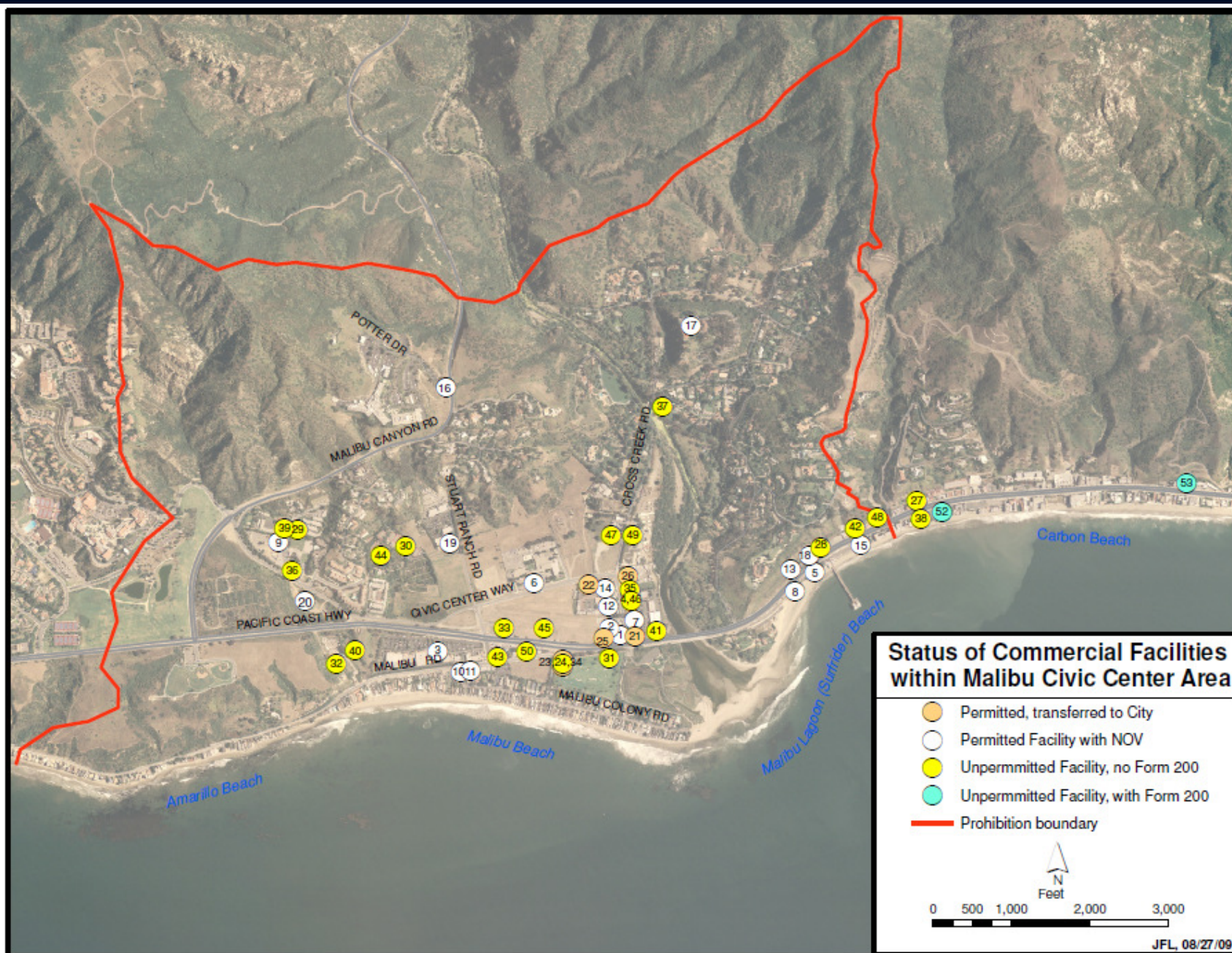
CONCLUSION

- ❑ Pathogens and nitrogen in wastewater released from OWDSs impair underlying groundwater as a potential source of drinking water

Tech Memo #1

Dischargers Have Poor Records of Compliance with Regional Board Order

Rebecca Chou, Ph.D., P.E.
Chief of Groundwater Permitting Unit
Regional Water Quality Control Board
Los Angeles Region



Notice of Violation (NOV) to 20 Permitted Facilities

Malibu Creek Preservation Co.
Malibu Country Mart I
Malibu Country Mart II
Malibu Country Mart III
Malibu Beach Inn
Malibu Colony Plaza

Fire Station No. 88
Surfrider Beach
Road Maintenance Yard 336
Malibu WPCP (2nd NOV)
Malibu Administrative Center
Malibu Pier State Park

Prudential Malibu Realty
Morton Gerson
Malibu Shores Motel
Hughes Research Lab
Malibu Lumber/City of
Malibu

Miramar Investment Co.
(2nd NOV)
Serra Retreat Center
Jack in the Box

Summary of Violations

Facility	TSO	Non Submittal	Late Submittal	Discharge Violations	Perjury Statement	Material Change	Total Violation Counts
Fire Station No. 88*				77	1	1	79
HRL Laboratories		3	2		1		6
Jack In The Box		25					25
Malibu Administrative Center*				44	1	1	46
Malibu Colony Plaza	2	3	9	46	1	1	62
Malibu Beach Inn	2	3		37	1		43
Malibu Country Mart I	1	5	13	133	1		153
Malibu Country Mart II	1	5	14	133	1		154
Malibu Country Mart III	1	5	13	133	1		153
Malibu Lumber				18	1	1	20
Malibu Pier State Park*		4	7	1	1	1	14
Malibu Shores Motel		2	9	13	1	1	26
Malibu Creek Plaza Shopping Center	1		3	38			42
Malibu Water Pollution Control Plant*			9	635**			644
Miramar Investment Co.		24					24
Morton Gerson Property		5	16	2			23
Prudential Malibu Realty		4					4
LA County Public Works Road Maintenance Yard*		1	123		1	1	126
Serra Retreat Center		24					24
Surfrider Beach*			4	3	1		8

*Public Sector

** including not reported parameters

Tech Memo #1

Conclusion

- 20 Permitted dischargers have poor records of Compliance with Regional Board Orders
- The compliance Status for small commercial and residential dischargers under City's oversight has not been analyzed

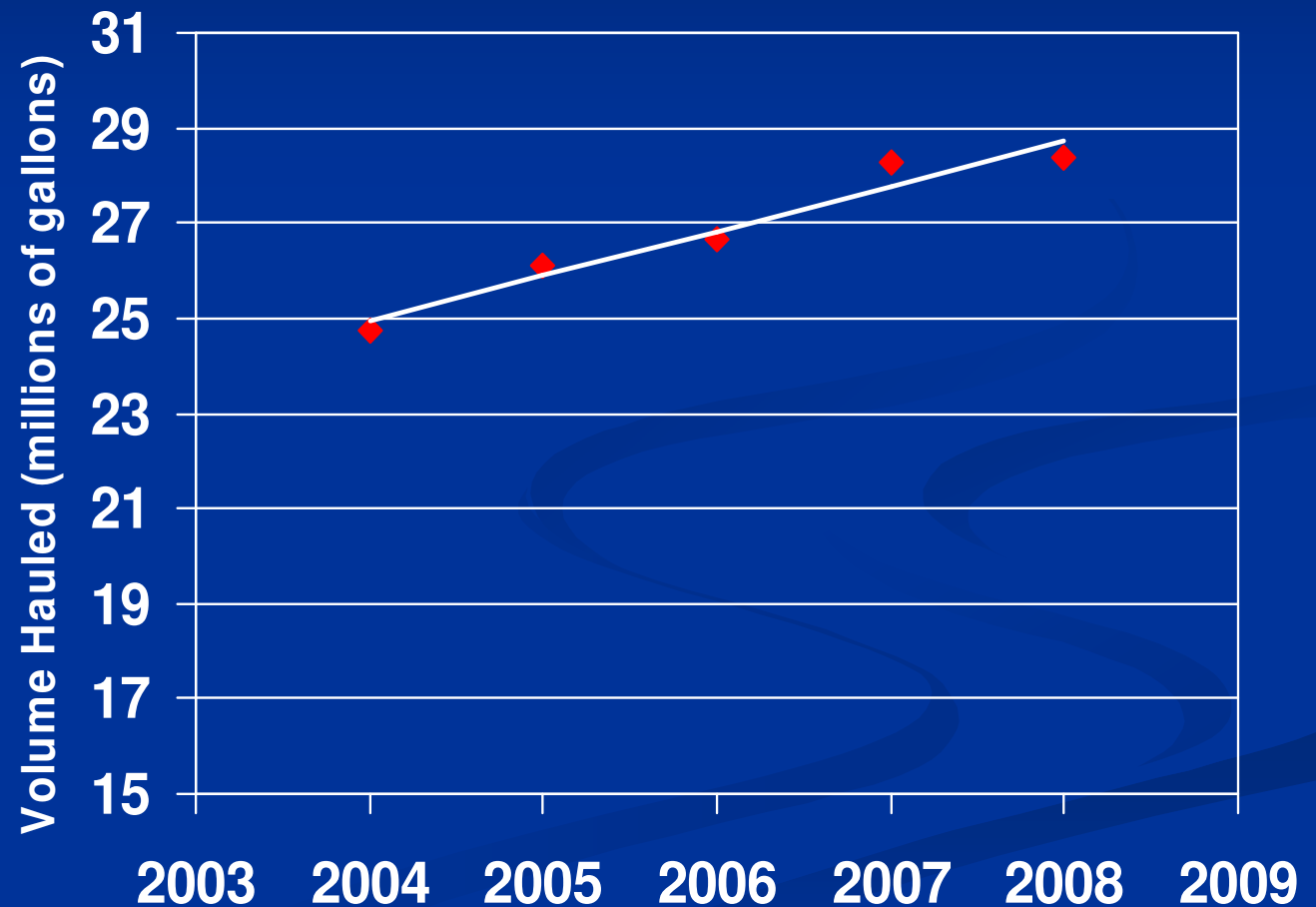
Hauling Practices (Tech Memo #5)

- Land uses generate more wastewater than can be transmitted into the subsurface.
- Increasing reliance on hauling raw sewage off-site:
 - Carson (Joint Water Pollution Control Plant)

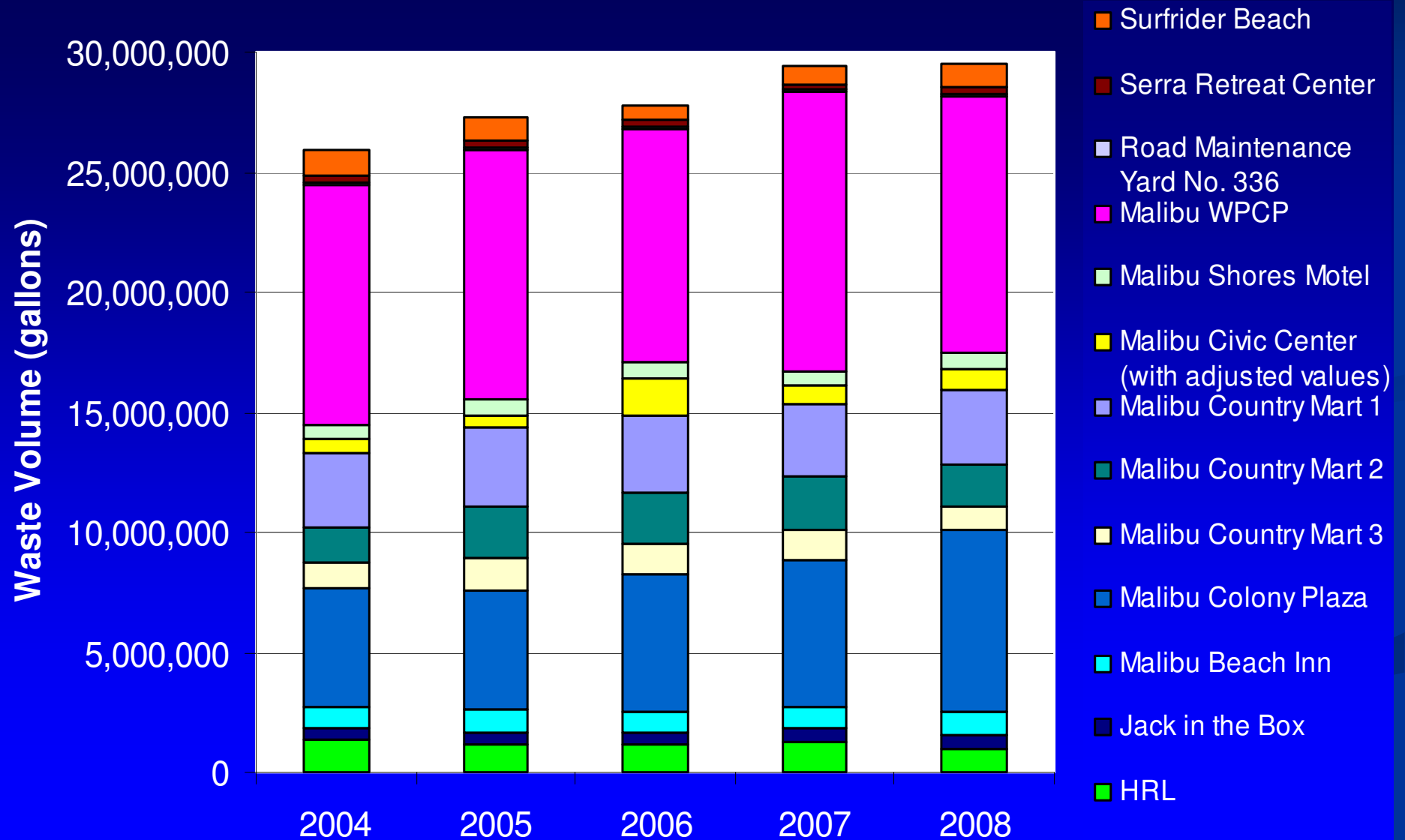


Waste Flow – Select Dischargers

- $> 20\%$ increase from 2004 to 2008
- Increasing at a rate of about 5% per year

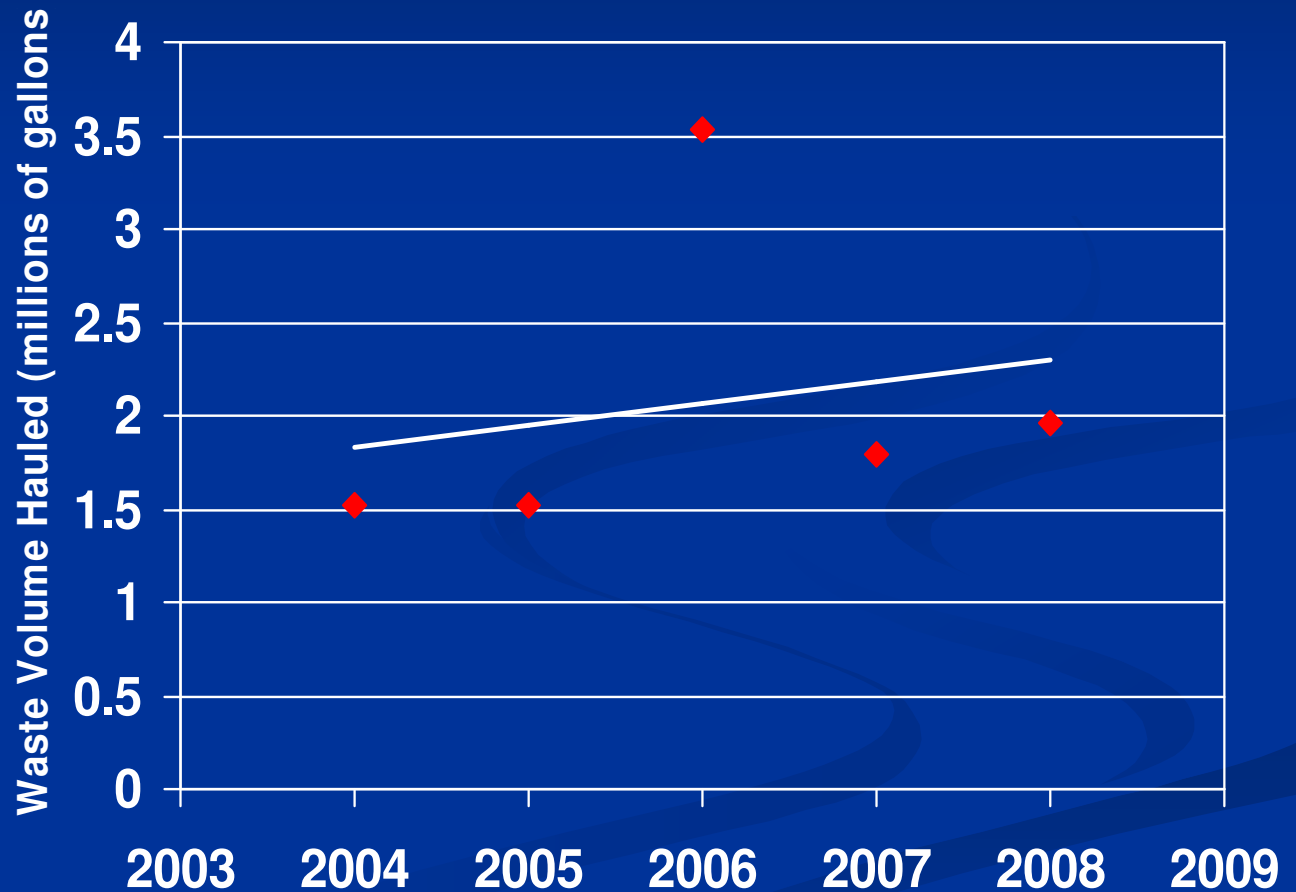


Waste Flow – Select Dischargers

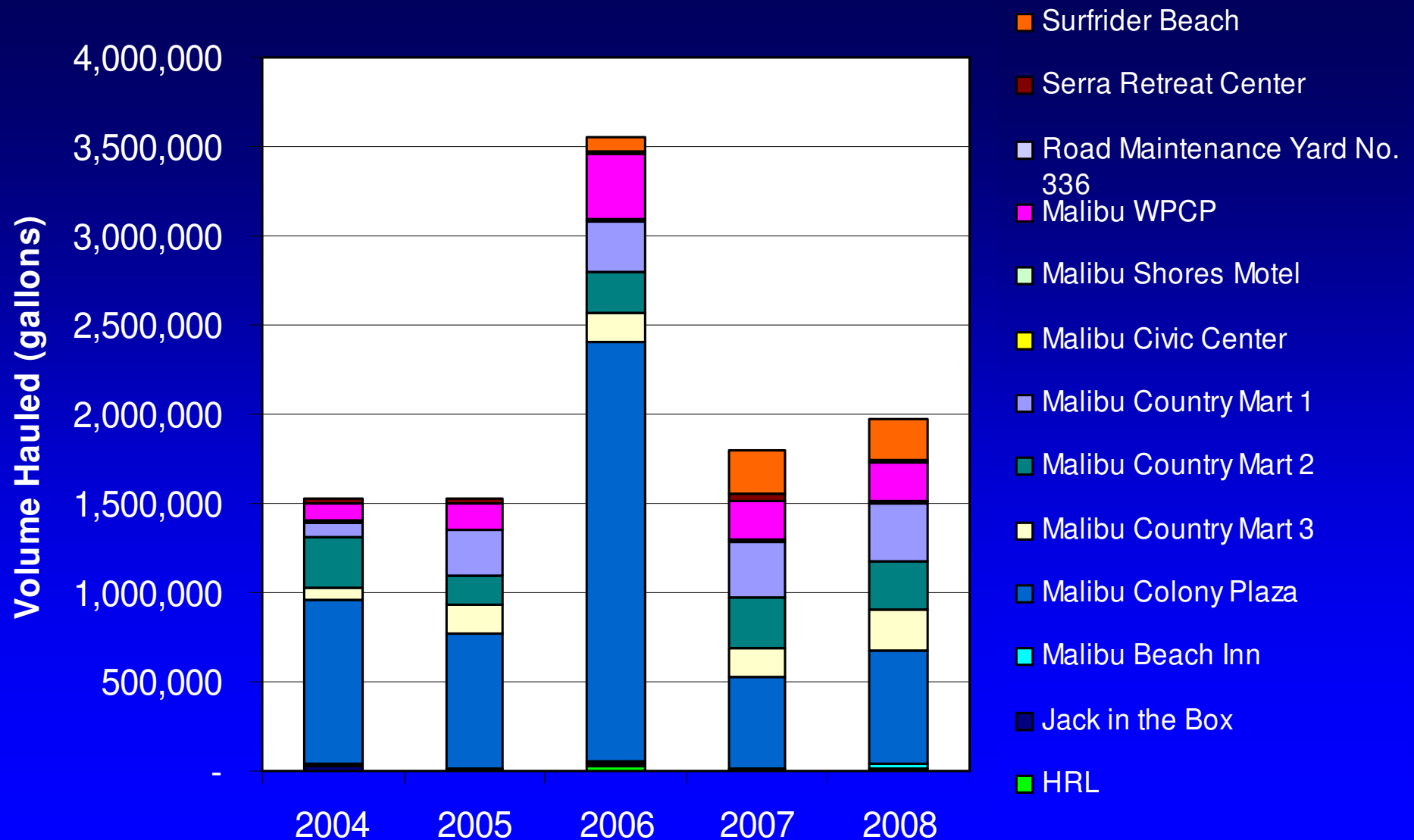


Hauling – Select Dischargers

- About 7% of raw sewage is hauled off site.
- > 29% increase from 2004 to 2008
- increasing at a rate of about 7% per year



Hauling – Select Dischargers



Hauling – Carbon Footprint Estimate

Tanker trucks released 252 tons CO₂ in 2008.

- Diesel engines emit 22.2 lbs of carbon dioxide per gallon of fuel*
- Roundtrips range from 64 to 178 miles
 - Carson (most discharged to LACSD Joint Water Pollution Control Plant)
 - Van Nuys (small amount discharged to City of LA Tillman Plant)

Pumping Contractors	Round trip (miles)	MPG	Frequency (days/week)	# Trucks	Tons CO ₂ per year
A&B Malibu Pumping	67	6	3	1	19
Ely Jrs. Pumping	178	6	5	2	171
McDermott Pumping	64	6	5	2	62
					252

*EPA Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel <http://www.epa.gov/oms/climate/420f05001.html>

Alternatives to the Prohibition

- Continued hauling — *not evaluated*
- Initiative by local entity — *not recommended*
 - City
 - Existing or newly formed utility
 - Existing or newly formed water authority
 - Public benefit (non-profit) corporation
 - Privately-run organizations (for-profit corporations, partnerships, proprietors)
- No action — *not recommended*

Potential Methods of Compliance

- Conceptual projects to comply with 5-year schedule in prohibition by Nov 2014.
 - Centralized, integrated water resources facilities
 - Interceptor sewers
 - Export to Castellemare (Hyperion sewer)
 - Export to Tapia
 - Decentralized facilities
- All sized at 300,000 gallons per day (existing flows)

Estimated Capital Costs of Conceptual Projects

Component	Centralized, Integrated Facilities	Interceptor Sewer to a:		Decentralized Facilities
		Hyperion Connection	Tapia Connection	
Local Sewer System	\$7,800,000	\$7,800,000	\$7,800,000	\$7,800,000
Interceptor Sewer	--	\$49,000,000	\$72,500,000	--
Treatment Plant(s)	\$5,900,000	--	--	\$5,800,000
Recycled Distribution System	\$3,000,000	0	0	\$3,000,000
Total	\$16,700,000	\$56,800,000	\$80,300,000	\$16,600,000

Funding Strategies

- Local funding sources
- Federal funding sources
- State funding sources
 - State Revolving Loan funds (SRF loans)
 - Christopher Stevens
 - Supervising Water Resources Control Engineer
 - Clean Water State Revolving Fund
 - State Water Resources Control Board
 - (916) 341-5698 cstevens@waterboards.ca.gov

Applying for Financial Aid

■ Planning

- Community leadership and civic engagement
- Set up a timeline

■ Work with funding contacts

- Consider expectations of the State (water quality restoration goals; sustainable supplies of water)
- Attend workshops
- Submit applications early

Next Steps

- Next Community Meeting
 - Tentatively scheduled for Thursday, Oct 1 (evening) – details to be posted at
http://www.waterboards.ca.gov/losangeles/press_room/announcements/Public-Hearing-Malibu/index.shtml
- Sept 10 – Release revisions to Tech Memo #3
- Oct 8 – Deadline for written comments
- Nov 5 – Regional Board hearing and proposed adoption

Metropolitan Water District of Southern California

700 North Alameda Street

Los Angeles, California

Contacts at the CA RWQCB - LA

General	Wendy Phillips	(213) 576-6618	wphillips@waterboards.ca.gov
Tech Memo #1	Rebecca Chou	(213) 620-6156	rchou@waterboards.ca.gov
Tech Memo #2.	David Koo	(213) 620-6155	dkoo@waterboards.ca.gov
Tech Memo #3	Elizabeth Erickson	(213) 620-2264	jogata@waterboards.ca.gov
Tech Memo #4	Toni Callaway	(213) 620-6155	tcallaway@waterboards.ca.gov
	Orlando Gonzales	(213) 620-2267	ogonzales@waterboards.ca.gov
	Jenny Newman (TMDL)	(213) 576-6691	jnewman@waterboards.ca.gov
Tech Memo #5	Dionisia Rodriguez	(213) 620-6122	drodriguez@waterboards.ca.gov
Legal	Jeff Ogata	(916) 341-5190	jogata@waterboards.ca.gov
Administrative	Rosie Villar	(213) 576-1364	rvillar@waterboards.ca.gov
Media	Steve Cain	(213) 576-6694	scain@waterboards.ca.gov

For future updates and revisions on our Malibu Prohibition Web page:, go to http://www.waterboards.ca.gov/losangeles/press_room/announcements/Public-Hearing-Malibu/index.shtml . To subscribe to our list for these announcements, go to: http://www.waterboards.ca.gov/resources/email_subscriptions/reg4_subscribe.shtml and check Prohibition-Malibu Civic Center Septics.